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10/583,219

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Jean Armioli

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EXAMINER

TIETJEN, MARINA ANNETTE

ART UNIT

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3753

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/583,219	Applicant(s) ARMIROLI ET AL.	
	Examiner MARINA TIETJEN	Art Unit 3753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 August 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-31 and 33-37 is/are pending in the application.
- 4a) Of the above claim(s) 21-23 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 37 is/are allowed.
- 6) ☒ Claim(s) 17-28, 30, 31 and 33-36 is/are rejected.
- 7) ☒ Claim(s) 29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 August 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This office action is responsive to the amendment filed on 08/24/2009. As directed by the amendment: claims 17 and 33 have been amended, claim 32 has been cancelled, and new claim 37 has been added. Thus, claims 17-31 and 33-37 are presently pending in this application.

Response to Arguments

2. Applicant's arguments with respect to claims 17-37 have been considered but are moot in view of the new ground(s) of rejection. The instant office action has been made final.

Claim Objections

3. Claims 29 and 31 are objected to because of the following informalities: The Examiner suggests changing "the first needle portion", in lines 3 and 6 of claim 19 and line 2 of claim 31, to read "the first needle" to correspond with "a first needle" as previously recited. Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

Art Unit: 3753

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 17-28, 30-31, and 33-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang (U.S. Pat. No. 6,149,124) in view of Rado (U.S. Pub. No. 2004/0074985).

Yang discloses a valve (10) for controlling flow rate and/or pressure comprising:
a valve body (12) defining an inlet (18), an outlet (20), and a seat (22);
a first valve member (24) moveable between a first valve member closed position and a first valve member open position, wherein at least a portion of the first valve member (24) is in contact with the seat (22) in the first valve member closed position, and the at least a portion of the first valve member (24) is spaced a predetermined distance from the seat (22) when the first valve member (24) is in the first valve member open position; and
an actuator (36) for receiving a voltage, wherein at least a portion (42) of the actuator (36) is moveable relative to the valve body (12);

Art Unit: 3753

wherein at least a portion of the first valve member (24) is moveable generally parallel to an axis of the actuator (36);

further comprising a first needle (44) coupled to the actuator (36), wherein the valve body (12) is further defined by a first port (30), a low pressure chamber (26), and a high pressure chamber (28), the first needle (44) is moveable between a first needle open position and a first needle closed position, at least a portion of the first needle (44) is in contact with at least a portion of the first port when the first needle (44) is in the first needle closed position, thereby defining a first boundary between the low pressure chamber (26) and the high pressure chamber (28), and wherein the first valve member (24), in the first valve member closed position, defines a second boundary between the low pressure chamber (26) and the high pressure chamber (28);

wherein the first needle (44) is coupled generally coaxially to a central portion of the actuator (36);

wherein at least a portion of the first valve member (24) defines a portion of the high pressure chamber (28);

wherein the valve body (12) further defines a first valve member abutment [valve body is fixedly coupled to 14 which provides an abutment to 24], and wherein at least a portion of the first valve member (24) contacts at least a portion of the first valve member abutment when the first valve member (24) is in the first valve member (24) open position;

wherein the first valve member (24) is defined by an axial cavity (32) formed therein;

Art Unit: 3753

wherein the high pressure chamber (28) is formed in part by the axial cavity (32);

wherein the first valve member (24) is further defined by a passageway (small lateral passageway to 32 leading to inlet) connecting the cavity in fluid communication with the inlet (18);

wherein the first valve member (24) is coupled to the actuator (36) for moving the first valve member (24) between the first valve member (24) open position and the first valve member (24) closed position;

wherein the first valve member (24) is in the first valve member (24) closed position when the voltage is about zero; and

A valve (10) comprising:

a valve body (12) defining an inlet (18), an outlet (20), a high pressure chamber (28) in fluid communication with the inlet (18), and a low pressure chamber (26);

an actuator (36) moveable relative to the valve body (12);

a first needle (44) coupled to the actuator (36) and moveable between a first needle open position and a first needle closed position, when the first needle (44) is in the first needle closed position the first needle (44) forms a first boundary between the low pressure chamber (26) and the high pressure chamber (28);

a second needle (24) separate and distinct from the first needle (44), and moveable between a second needle open position and a second needle closed position, when the second needle (44) is in the second needle closed position the second needle (44) forms a second boundary between the low pressure chamber (26) and the high pressure chamber (28); and

a restriction part (29) located in the high pressure chamber (28) [restriction part 29 defines the lowermost part of the high pressure chamber 28] between the first needle (24) and the second needle, the restriction part (29) having a restriction passageway (30) which allows the passage of fluid from one side of the restriction part (29) to another side of the restriction part (29), the restriction passageway (30) having a smaller size than a passageway (22) formed at the first boundary;

wherein the high pressure chamber (28) is located between the first needle (44) and the second needle (24), and when a voltage is applied to the actuator (36), movement of the actuator (36) causes the first needle (24) to move to the first needle open position which opens the first boundary and results in a pressure drop in the high pressure chamber, the pressure drop causing the second needle (24) to move to the second needle open position.

However, Yang does not disclose the actuator is a piezoelectric portion, and wherein the piezoelectric portion is a ring disc, the piezoelectric portion having a plurality of holes formed therein which allow the passage of fluid through the piezoelectric portion during use of the valve when the first valve member is in the first valve member open position in order to reduce resistance of the piezoelectric portion to movement thereof; wherein the piezoelectric portion is positioned in the low pressure chamber; wherein the piezoelectric portion is configured such that it has a concavity defining a first surface directed towards the first needle portion when the voltage is about zero; wherein at least a portion of the first surface is selectively deformed by applying a voltage as the first valve member moves relative to the valve body.

Rado teaches a valve needle actuator (20b), wherein the actuator is a piezoelectric portion (50, fig. 2) wherein the piezoelectric portion (50) is a ring disc (para. 0026), the piezoelectric portion (50) having a hole (vent hole, fig. 2) formed therein which allow the passage of fluid through the piezoelectric portion (50) during use of the valve in the valve member open position in order to reduce resistance of the piezoelectric portion (50) to movement thereof; wherein the piezoelectric portion (50) is configured such that it has a concavity defining a first surface directed towards the valve member (70) when the voltage is about zero; wherein at least a portion of the first surface is selectively deformed by applying a voltage as the first valve member (70) moves relative to the valve body (22b), for the purpose of providing a needle actuator which is simple inexpensive, and accurate (para. 008).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Yang's valve such that the actuator is a piezoelectric portion, and wherein the piezoelectric portion is a ring disc, the piezoelectric portion having a at least one hole formed therein which allow the passage of fluid through the piezoelectric portion during use of the valve when the first valve member is in the first valve member open position in order to reduce resistance of the piezoelectric portion to movement thereof; wherein the piezoelectric portion is configured such that it has a concavity defining a first surface directed towards the first needle portion when the voltage is about zero; wherein at least a portion of the first surface is selectively deformed by applying a voltage as the first valve member moves relative to the valve

Art Unit: 3753

body, as taught by Rado, for the purpose of providing a needle actuator which is simple inexpensive, and accurate.

However, Rado does not teach the piezoelectric portion having a plurality of holes formed therein. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Rado's piezoelectric portion included a plurality of vent holes to provide an increased venting ability, in a manner known in the art which yields predictable results, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

Allowable Subject Matter

7. Claim 37 is allowed.
8. Claim 29 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 3753

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARINA TIETJEN whose telephone number is (571) 270-5422. The examiner can normally be reached on Mon-Thurs, 9:30AM-5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ROBIN EVANS can be reached on (571) 272-4777. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3753

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. T./
Examiner, Art Unit 3753

/John K. Fristoe Jr./
Primary Examiner, Art Unit 3753